

FIG.1

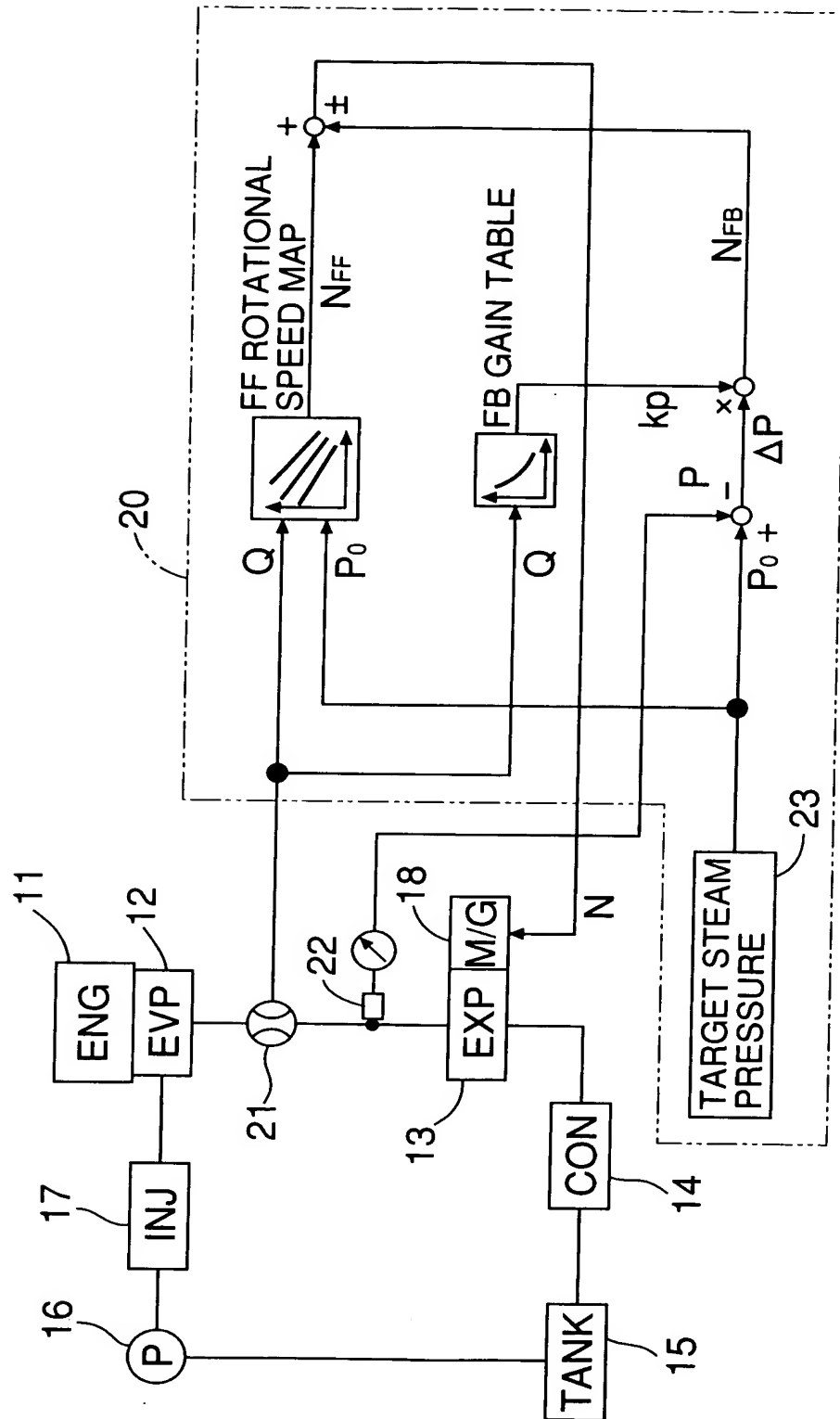
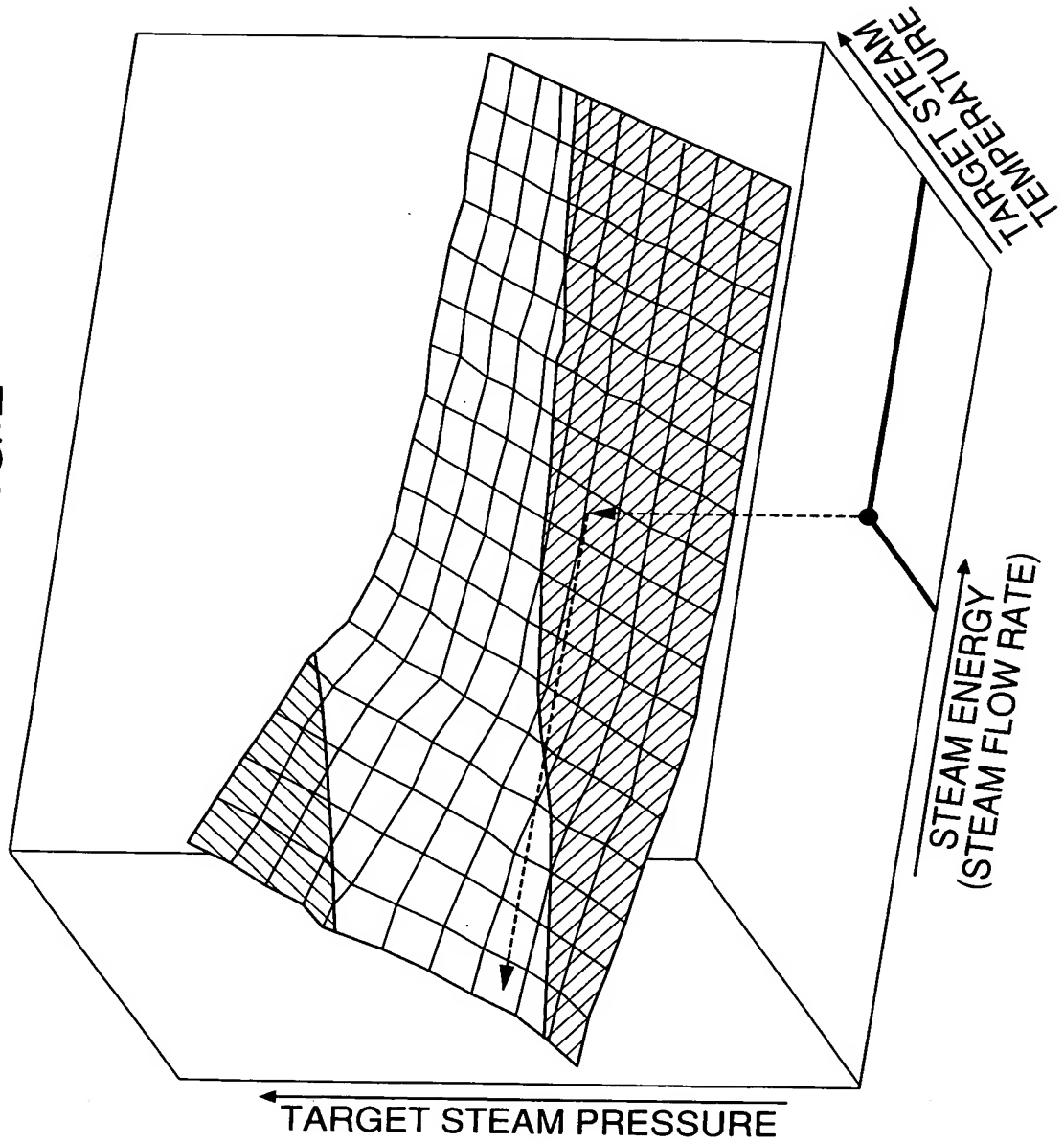
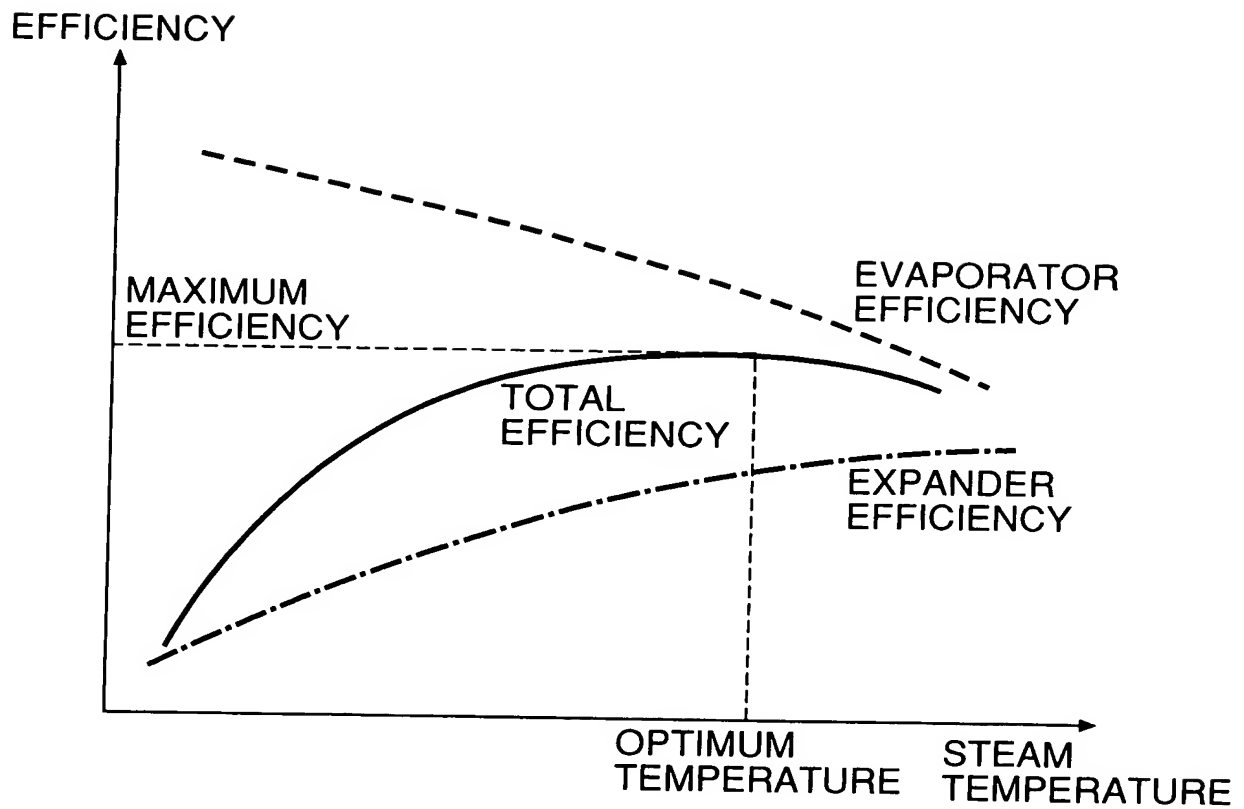


FIG.2



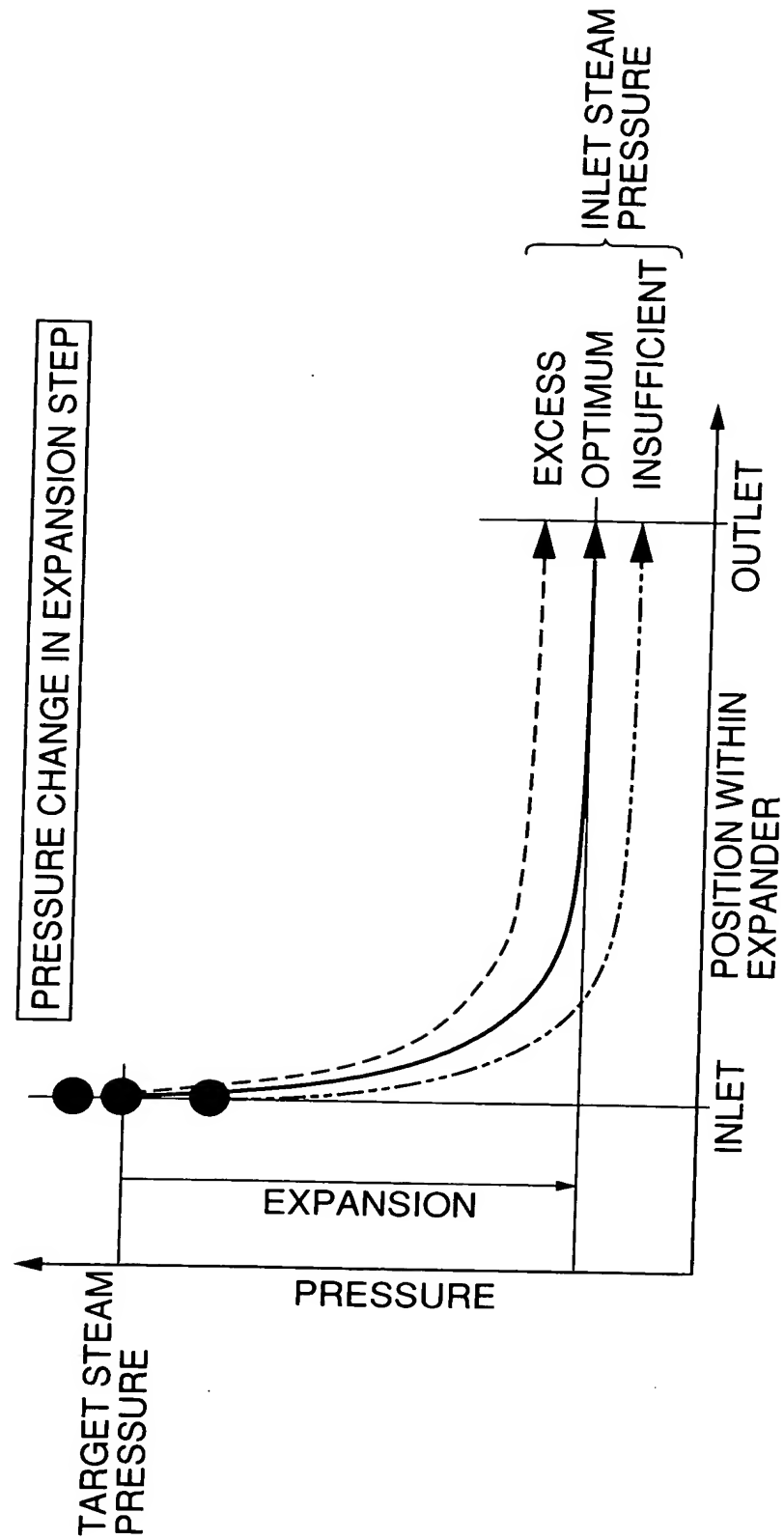
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FIG.3



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FIG.4



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FIG.5A

WHEN STEAM FLOW RATE IS LOW

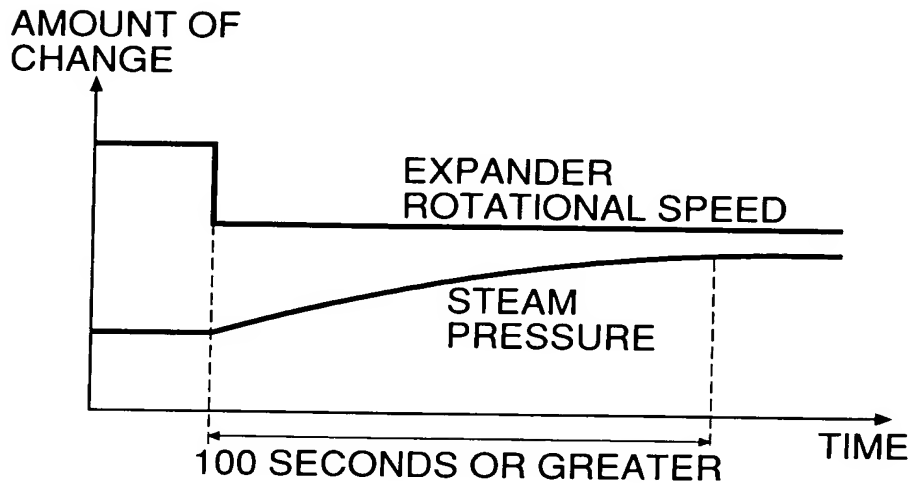
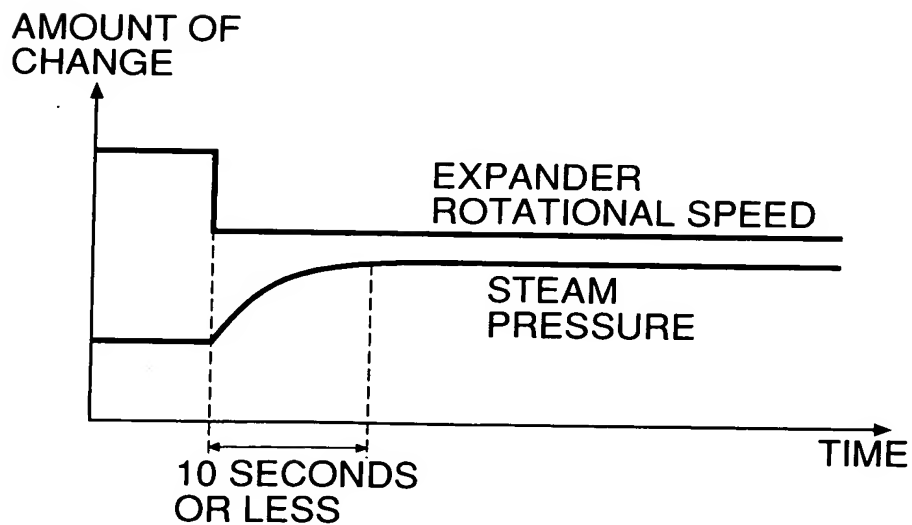


FIG.5B

WHEN STEAM FLOW RATE IS HIGH



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FIG.6B

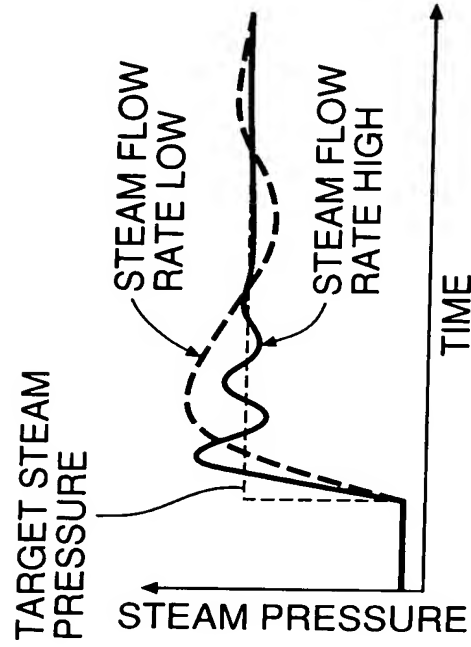
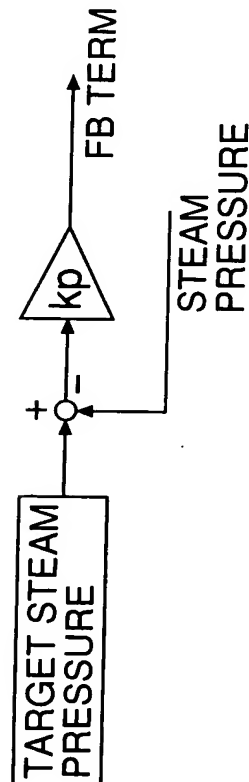


FIG.6A



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FIG.7B

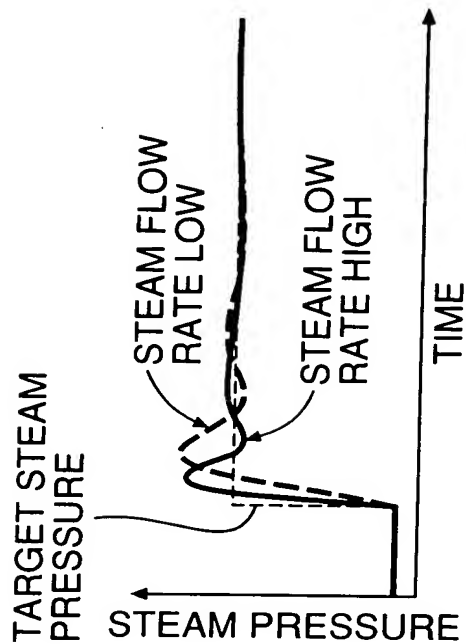
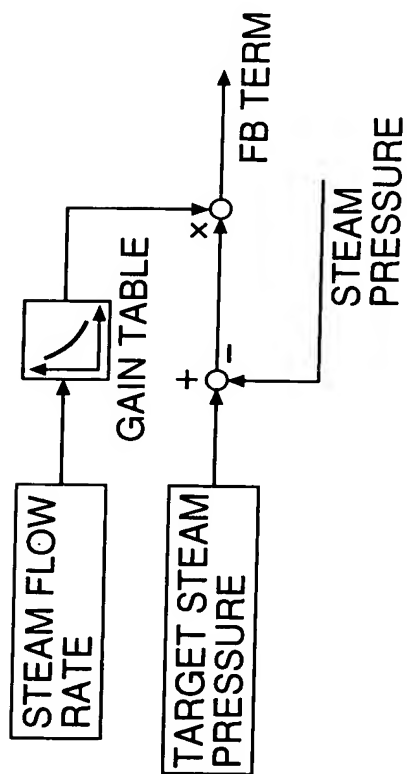
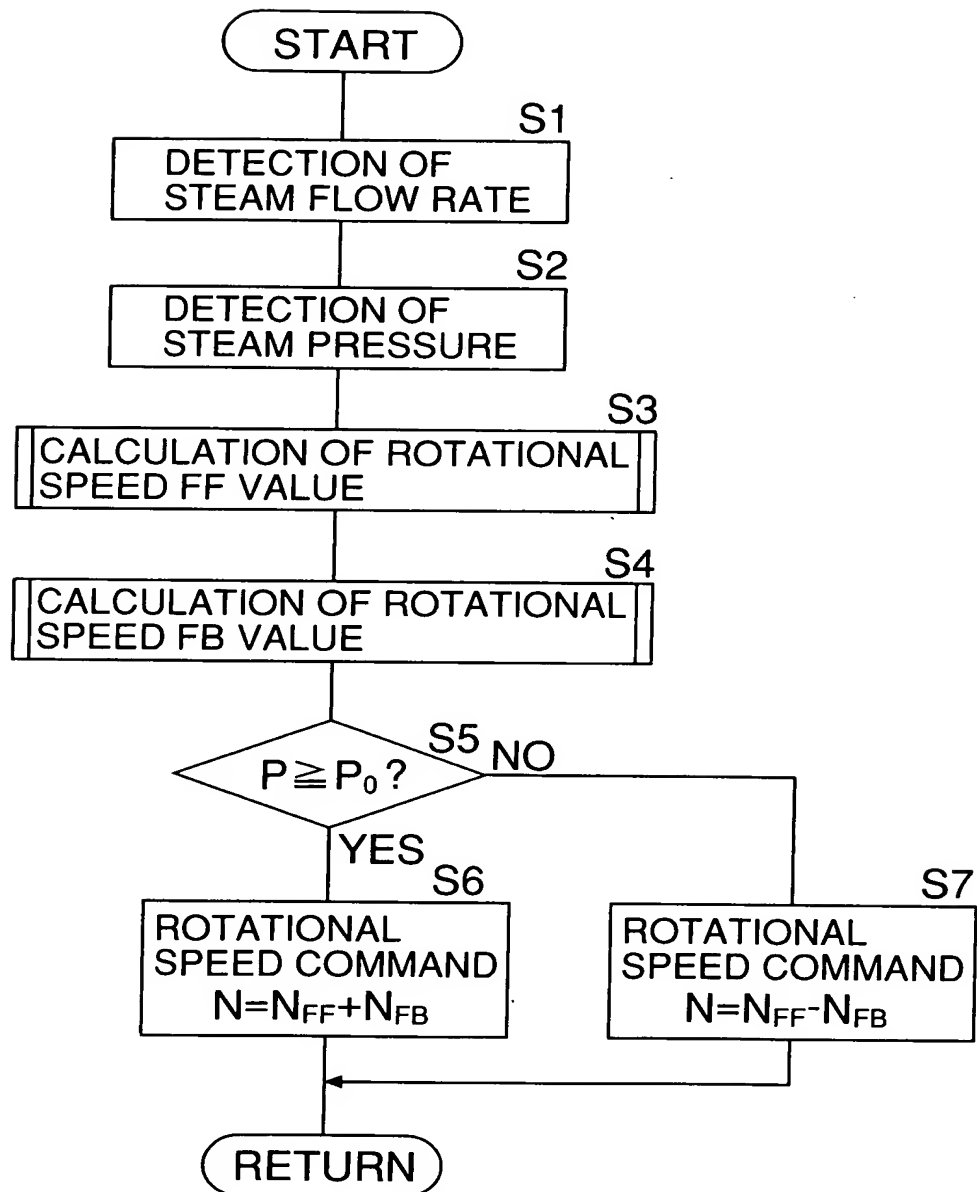


FIG.7A



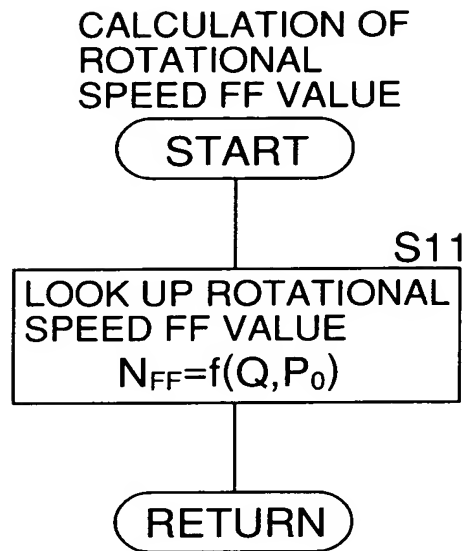
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FIG.8



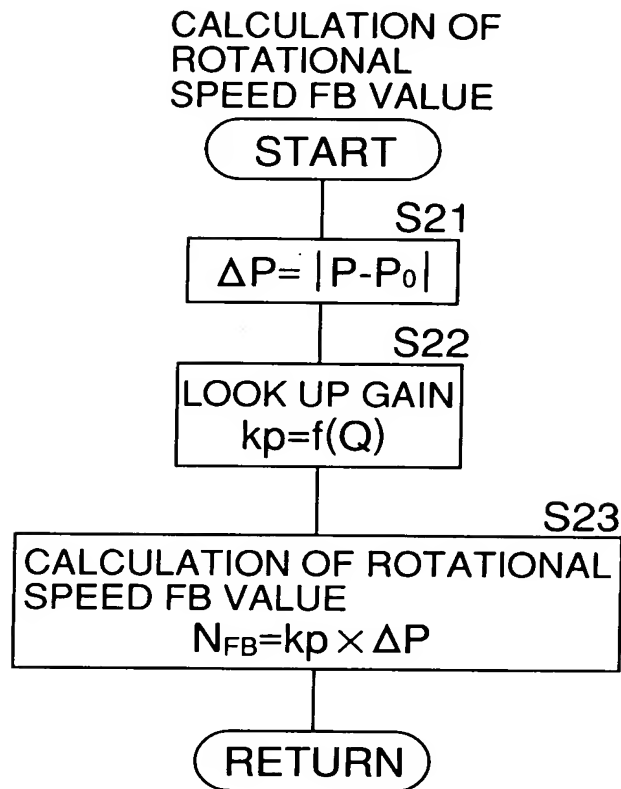
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FIG.9



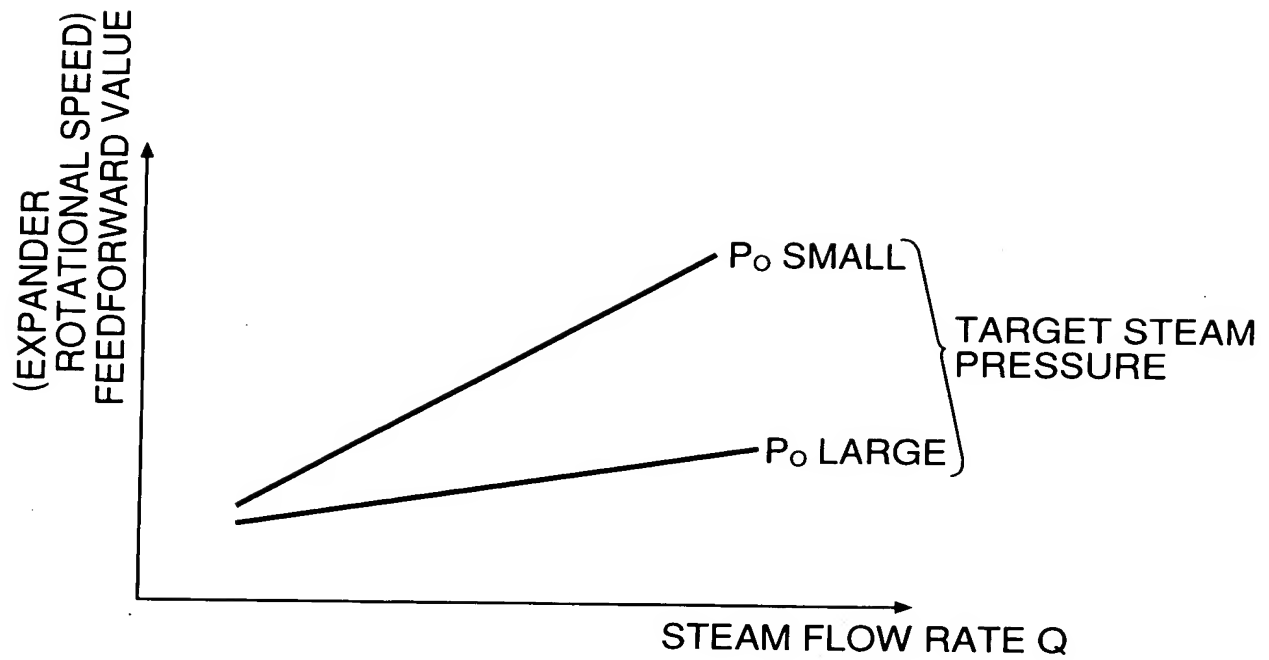
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FIG.10



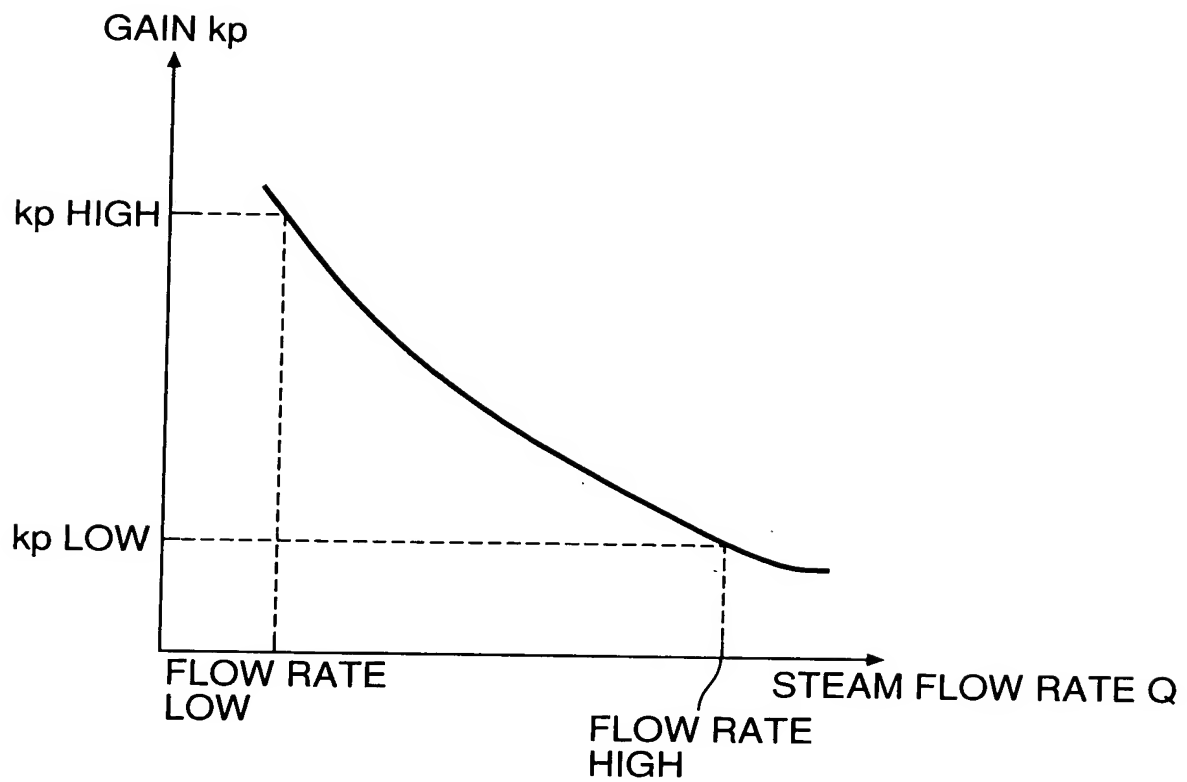
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FIG.11



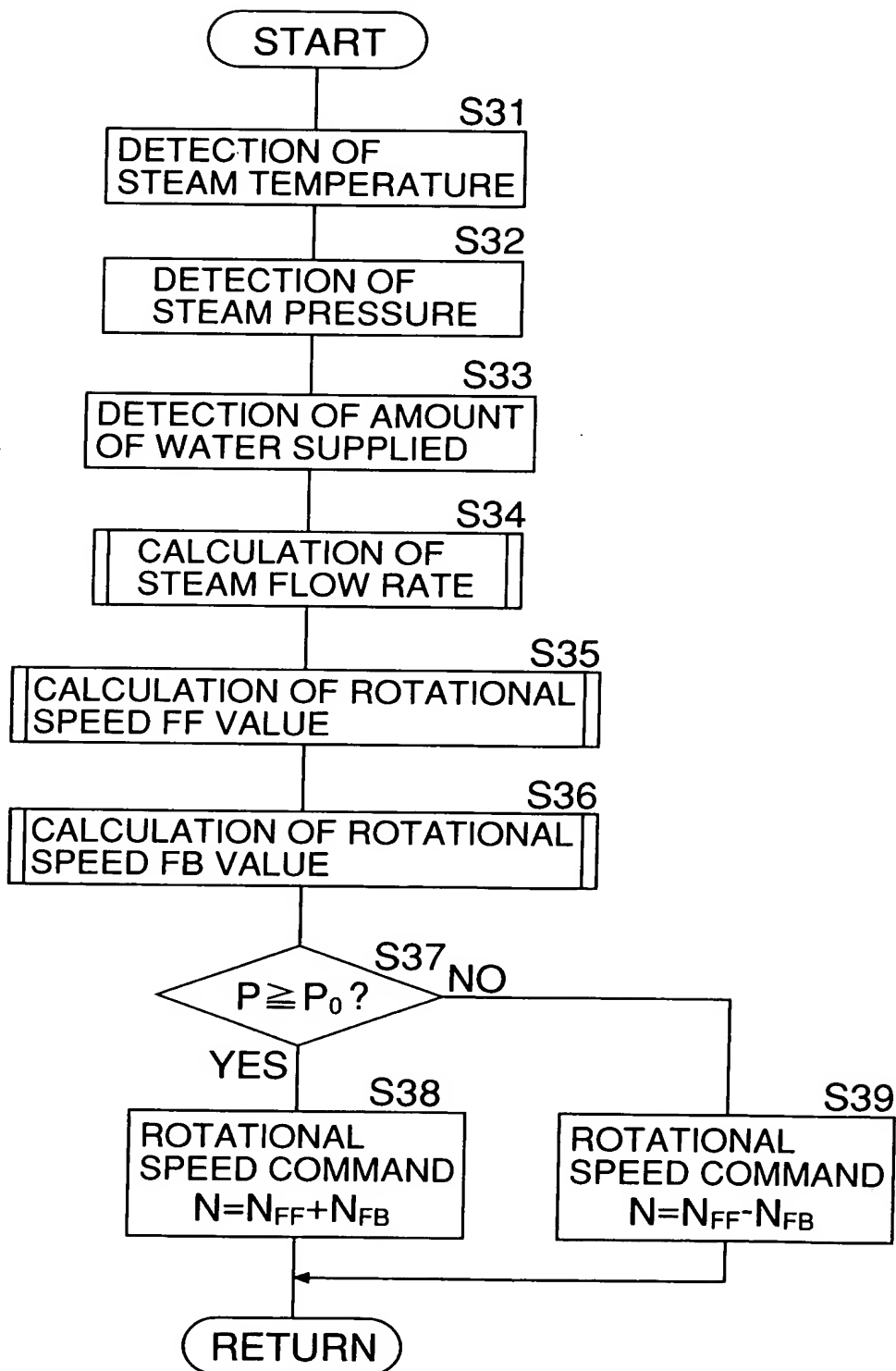
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FIG.12



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FIG.14



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FIG.15

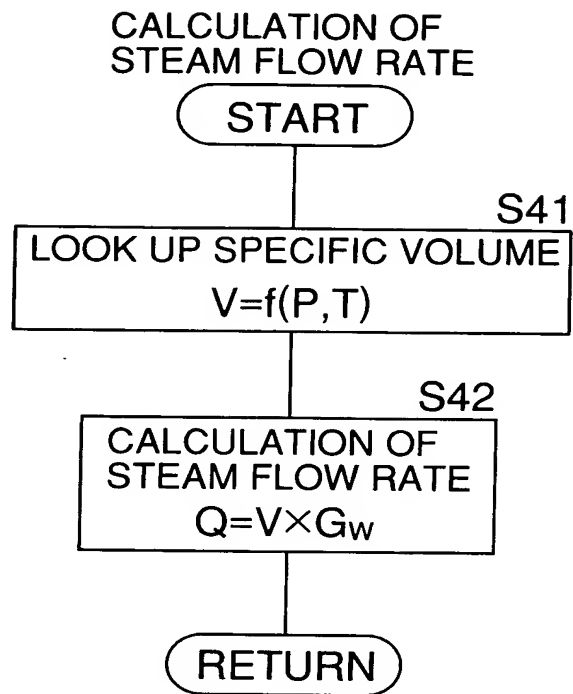


FIG.16

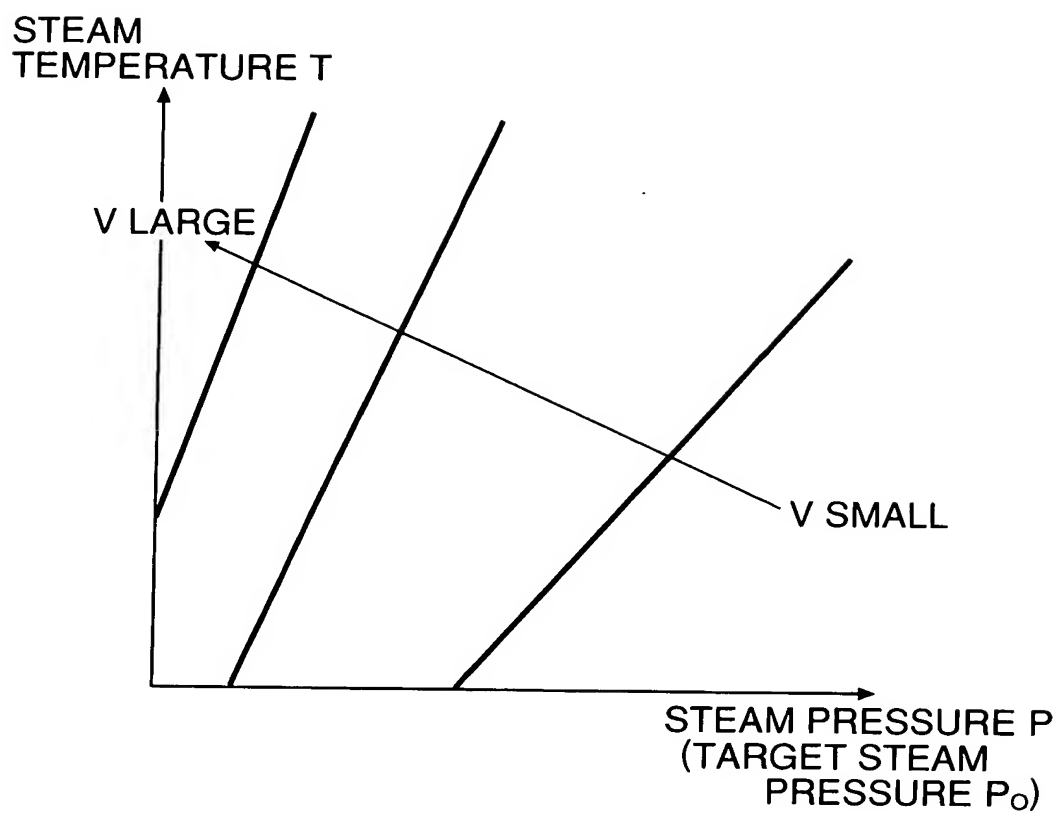
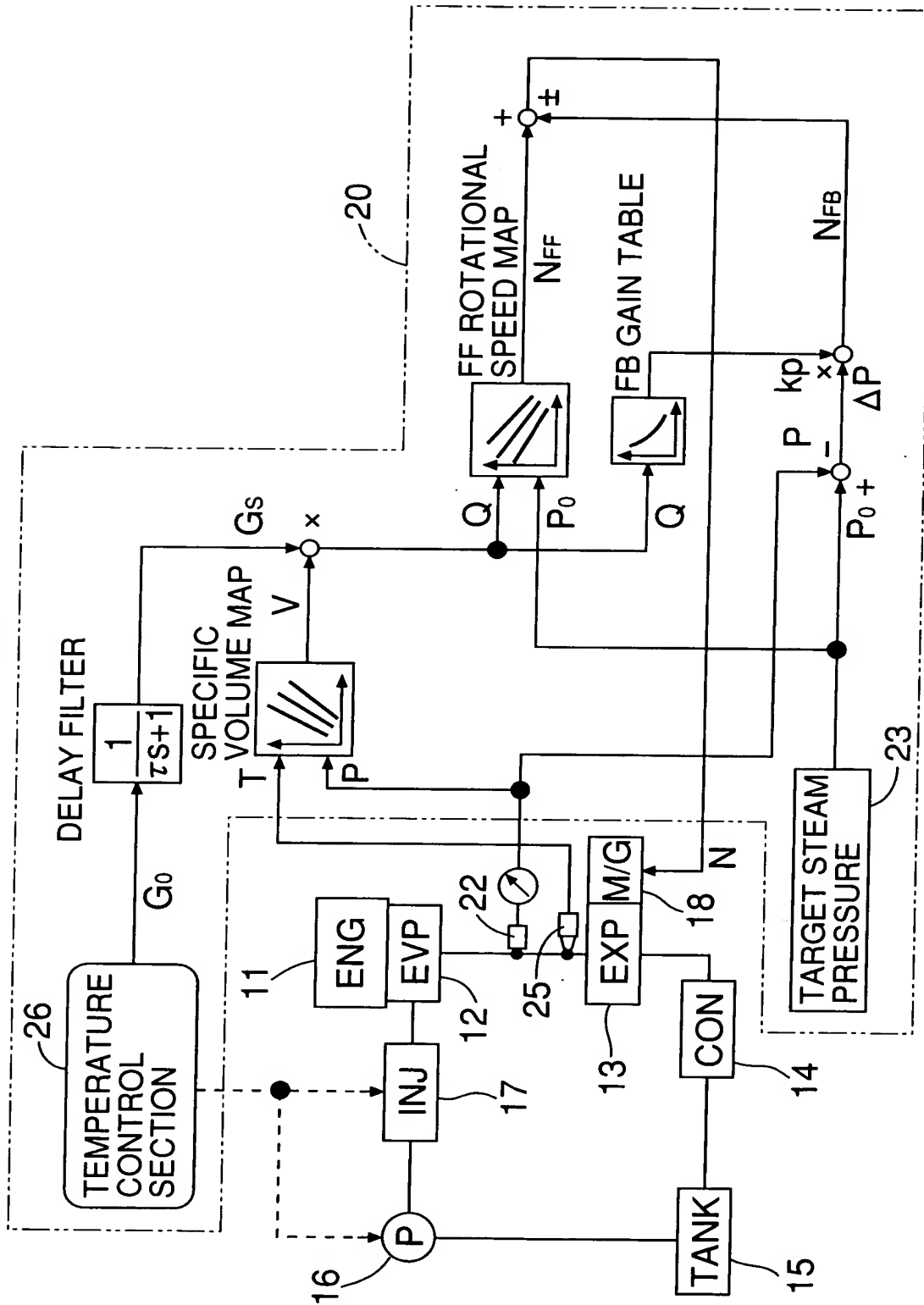
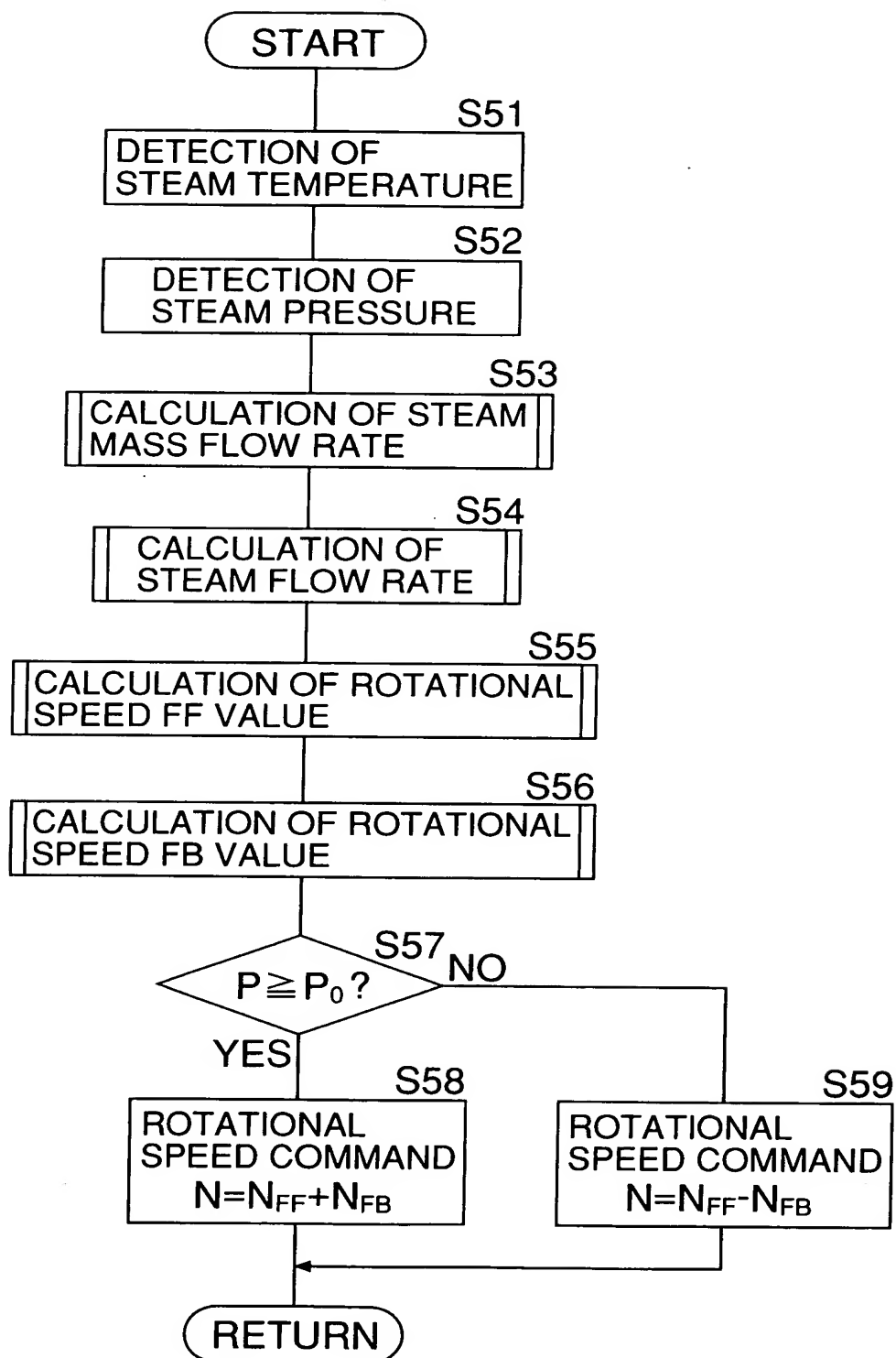


FIG.17



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FIG.18



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FIG.19

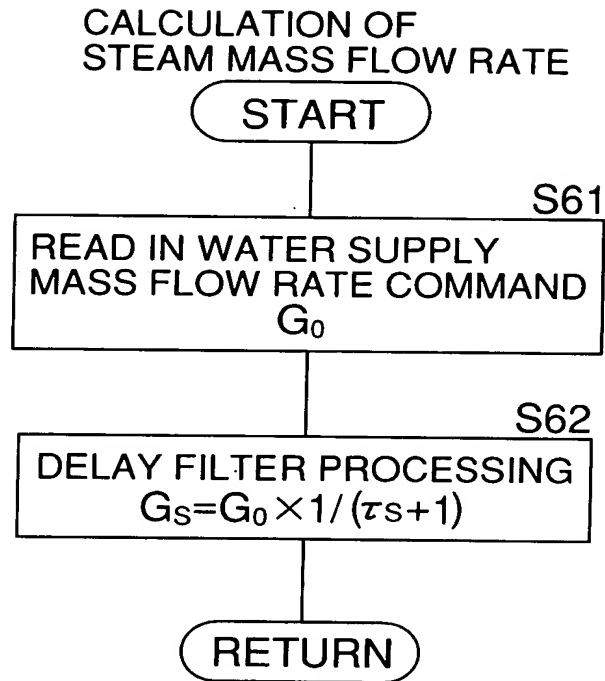
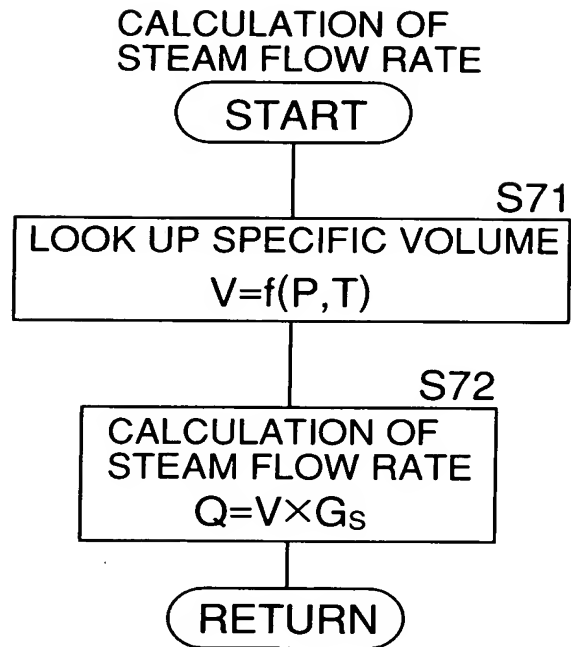


FIG.20



The diagram illustrates a control system for a steam engine, organized into several functional blocks and interconnected by signal lines. The system is divided into three main sections by dashed lines: a Temperature Control Section (26), a Specific Volume Map (20), and a Feedback/Control Section (23).

Temperature Control Section (26): This section includes a **TEMPERATURE CONTROL SECTION** block. It receives a feedback signal G_0 and outputs a signal T_0 to **DELAY FILTER 1**. The output of Delay Filter 1 is G_s , which is fed into the **SPECIFIC VOLUME MAP** (20).

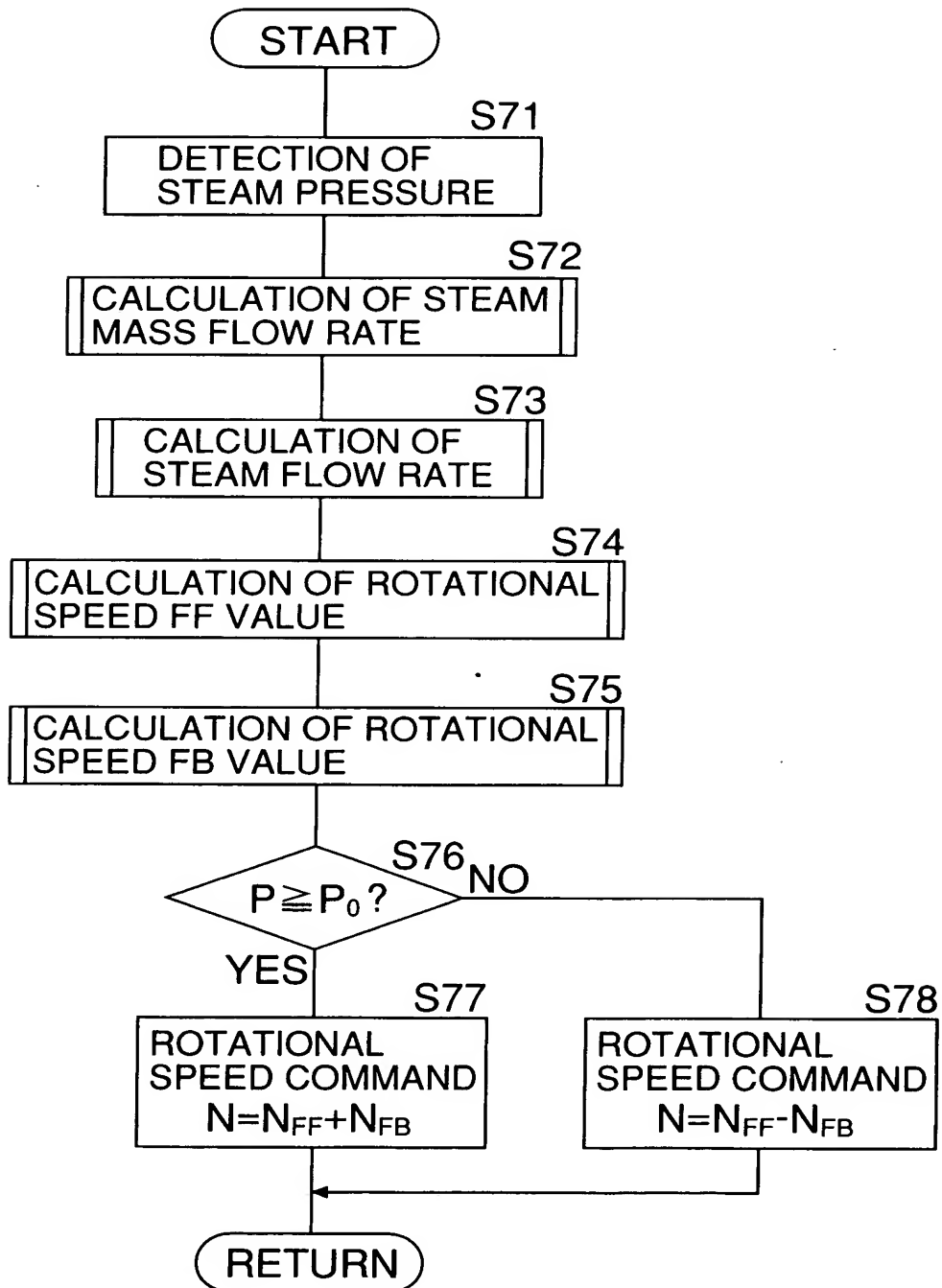
Specific Volume Map (20): This block receives G_s and P_0 (from the **EXP M/G** block) and outputs a signal V to a summing junction (indicated by a circle with an 'x').

Feedback/Control Section (23): This section contains the core control logic. It includes:

- DELAY FILTER 2:** Receives T_0 and outputs T to the **SPECIFIC VOLUME MAP**.
- EXP M/G (13):** Receives T and outputs P_0 to the **SPECIFIC VOLUME MAP** and N to the **CON** block.
- CON (14):** Receives N and outputs a signal to the **TANK** block.
- TANK (15):** Receives the signal from the **CON** block and outputs a signal to the **P** block.
- P (16):** Receives the signal from the **TANK** block and outputs a signal to the **INJ** block.
- INJ (17):** Receives the signal from the **P** block and outputs a signal to the **ENG** block.
- ENG (11):** Receives the signal from the **INJ** block and outputs a signal to the **EVP** block.
- EVP (12):** Receives the signal from the **ENG** block and outputs a signal to the **EXP M/G** block.
- EXP M/G (13):** Receives the signal from the **EVP** block and outputs N to the **CON** block.
- FB GAIN TABLE:** Receives N and outputs Q to a summing junction (indicated by a circle with a '+').
- EXPANDER ROTATIONAL SPEED TABLE:** Receives Q and outputs N_{FF} to a summing junction (indicated by a circle with a '+').
- Summing Junctions:**
 - The first summing junction (circle with 'x') combines G_s and P_0 to produce V .
 - The second summing junction (circle with '+') combines Q and N_{FF} to produce N .
 - The third summing junction (circle with '+') combines P_0 and N_{FF} to produce ΔP .
- Target Steam Pressure (23):** A block that receives ΔP and outputs a signal to the **CON** block.

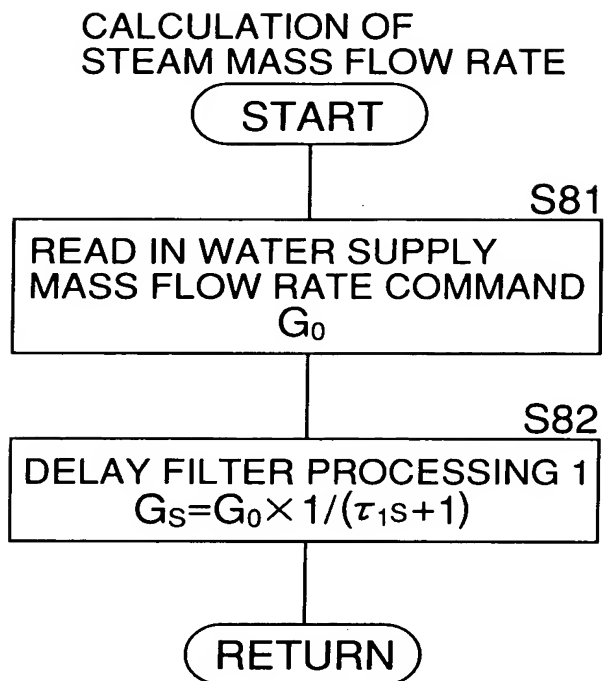
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FIG.22



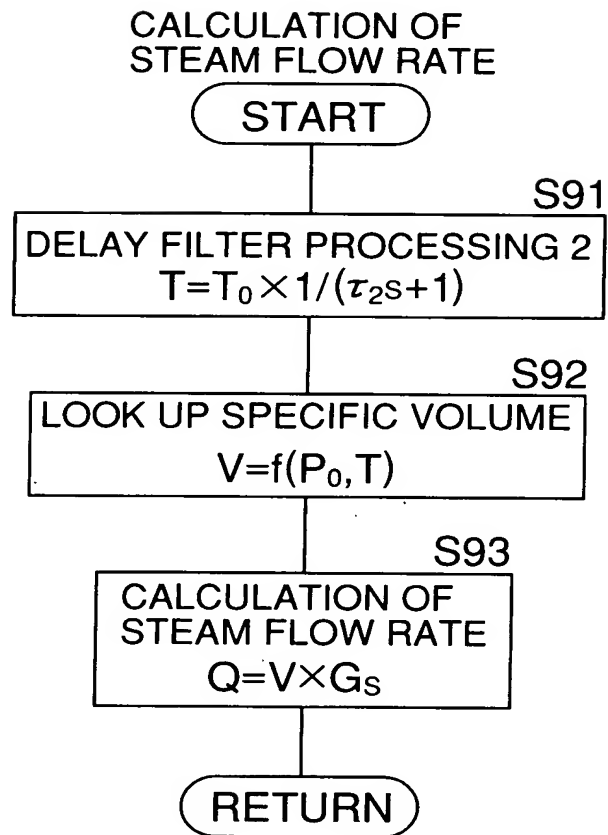
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FIG.23



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FIG.24



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FIG.25

